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REMARKS/ARGUMENTS

Claims 1, 4, 5, 6, and 9 are now pending. Favorable reconsideration is respectfully requested.

The rejection of the claims under 35 U.S.C. §101 is believed to be obviated by the amendment submitted above. Claims 1 and 4 have been amended to specify an "isolated strain." Accordingly, withdrawal of this ground of rejection is respectfully requested.

The rejection of the claims under 35 U.S.C. §112, second paragraph, is believed to be obviated by the amendment submitted above.

Claim 1 has been amended to remove the terms identified by the Examiner as "conditional" and to specify the medium.

Claim 4 has been amended to clarify the recitation of the sequence of the glutathione synthase. Only one amino acid sequence of glutathione synthase from *Saccharomyces cerevisiae* is known and registered in a public protein database. For example, the sequence is registered as Accession No. Q08220 in the SwissProt database. One skilled in the art can easily obtain the sequence information using the term "glutathione synthetase." Therefore, the recitation "the amino acid residue of 370th position of glutathione synthetase" is clear even though the amino acid sequence of glutathione synthetase is not shown in the Sequence Listing.

Claims 5 and 9 have been amended for clarity.

Withdrawal of this ground of rejection is respectfully requested.

The rejection of Claims 1-5 and 7-9 under 35 U.S.C. §102(b) over Ohtake et al. is respectfully traversed. The claimed isolated strain and yeast extract are not described by Ohtake et al.

The Examiner has taken the position that Ohtake et al. discloses a strain that can contain 1% or more γ-glutamylcysteine and 0.004-0.1% of glutathione with reference to

Table III of the reference. However, all of the strains disclosed in Table III contain less than 1% γ-glutamylcystein. The strain recited in Claim 1 is not disclosed by Ohtake et al.

The strain recited Claim 4 is totally different from the mutants disclosed by Ohtake et al. As shown in Table III of the reference, the mutant "*gshI*" cannot produce γ-glutamylcysteine and glutathione unless a medium is supplemented with γ-glutamylcysteine and glycine. Using a culture medium supplemented with γ-glutamylcysteine is neither realistic nor economical for the purpose of producing γ-glutamylcysteine by fermentation. In addition, "*gshI*" is suggested to be lacking in γ-glutamylcysteine synthetase activity (see page 3149, last line of the left column to line 2 of the right column). A strain which is lacking in γ-glutamylcysteine synthetase activity cannot produce γ-glutamylcysteine. Therefore, "*gshI*" is not suitable for production of γ-glutamylcysteine.

In Table III, the mutant "*gsh2*" is also disclosed. However, that mutant cannot produce glutathione and thus, cannot grow in a glutathione-free medium. Therefore, "*gsh2*" is not suitable for production of γ-glutamylcysteine in a glutathione-free medium.

Based on the foregoing, withdrawal of this ground of rejection is respectfully requested.

The rejection of Claims 1-3, 5, and 7-9 under 35 U.S.C. §102(a) over Sugiyama et al. is respectfully traversed. The claimed isolated strain and yeast extract are not described by Sugiyama et al.

The Examiner has taken the position that Sugiyama et al. discloses a strain that can contain 1% or more γ-glutamylcysteine and 0.004-0.1% of glutathione with reference to Figure III. However, Figure III only shows glutathione (GSH) content of a yeast in which yakpl is deleted. γ-glutamylcysteine content is not mentioned anywhere in the document. Therefore, the claimed strain is not described by Sugiyma et al. Accordingly, withdrawal of this ground of rejection is respectfully requested.

The rejection of Claims 5 and 7-9 under 35 U.S.C. §102(b) or §102(b) over Kuroda et al. is respectfully traversed. That reference fails to disclose or suggest the claimed strain.

The Examiner states that Kuroda et al. discloses a yeast extract composition which contains glutathione which appears to be identical to the yeast extract of the present invention. However, the concentration of glutathione contains in the composition disclosed in Kuroda et al. is not less than 0.3% (see attached translation of Table 2-1), which is different from the concentration of glutathione contained in the yeast extract of the present invention. Furthermore, in the composition disclosed in Kuroda et al., glutathione and γ-glutamylcysteine are not originally contained in yeast extract, but added separately (please refer to the attached "Translation of Example 2 and Table 2 of Kuroda et al.") so that the composition should finally contain a desired concentration of glutathione and γ-glutamylcysteine. Thus, the reference does not disclose "yeast extract" containing a desired concentration of glutathione and γ-glutamylcysteine. Therefore, the claimed invention is not described by Kuroda et al.

Kuroda et al. also fail to suggest the claimed invention, since a person skilled in the art cannot easily obtain the present invention based on the disclosure of Kuroda et al., which do not disclose any specific yeast strain containing glutathione and γ-glutamylcysteine.

There has been a problem in the industrial production of γ-glutamylcysteine using yeast. In order to accumulate a high concentration of γ-glutamylcysteine in yeast, GSH2 (glutathione synthetase) gene is often inactivated since GSH1 (γ-glutamylcysteine synthetase) catalyzing the reaction of γ-glutamylcysteine synthesis is subjected to feedback inhibition by glutathione which is synthesized by GHS2. However, inactivation of GSH2 results in reduced growth rate of yeast and decrease of γ-glutamylcysteine yield, because γ-glutamylcysteine cannot fully substitute for the essential function of glutathione in the cell.

The inventor of the present invention assiduously studied and finally solved the above-mentioned problem. That is, the yeast of the present invention produces high amount of γ-glutamylcysteine while growing at normal growth rate.

Based on the foregoing, the claimed strain and extract are neither disclosed nor suggested by Kuroda et al. Withdrawal of this ground of rejection is respectfully requested.

Applicants submit that the present application is in condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully submitted,

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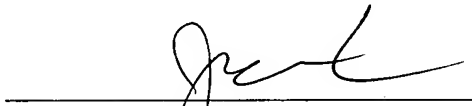

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Translation of Example 2 and Table 2 of JP04066069

For a seasoning which was prepared by using powder of self-digested yeast extract as yeast extract, and by adding glutathione, γ-glutamylcysteine, cysteine or oxidized glutathione (GSSG) in the composition shown in Example 1, organoleptic test was performed. Sulfur-containing compounds were added at the concentration of 0.3-30% per yeast extract. 1% solution was prepared in the same manner as Example 1 and evaluation using a 10-member panel was performed. The result is shown in Table 2.

Table2-1

glutathione contents per yeast extract	0.3	2.0	4.0	6.0	10	20	30(%)
organoleptic evaluation	3.5	4.0	4.3	4.5	4.5	4.2	3.5

Table2-2

r-glutamylcysteinecontents per yeast extract	0.1	2.0	4.0	6.0	10	20	30(%)
organoleptic evaluation	3.5	3.8	4.1	4.4	4.2	4.0	3.4